Design and Implementation of an E-Commerce Platform—SIMEC

Hua Cheng, Meiqi Fang, Lin Guan, Zuqiang Hong
Renmin University of China, Beijing, PR China

ABSTRACT

In this paper, we describe how to design the core functions of an e-commerce simulation platform and how to use program languages to implement it. Since last July up to now, we have been working on the new version of the simulation platform, SIMEC3.0 in our Economy and Science Lab. In our project, we use the leading-edge object-oriented language JAVA and a subset of J2EE framework as the technical architecture. XML is used in the platform to store and exchange all kinds of commerce documents. Because all the research on building an e-commerce simulation platform has much to do with the development of SIMEC, in this paper, we will use SIMEC3.0 as an example to describe how to design and implement an e-commerce simulation platform.

Keywords: E-commerce, simulation, J2EE, XML, SIMEC

INTRODUCTION

Nowadays, e-commerce is becoming so popular with the development of Internet that it has transformed the traditional ways of doing business face-to-face into signing a contract with a virtual enterprise on the basis of trust. It enables many businessmen and companies to do business at any place at any time, no matter what scale they have. In China mainland, just because of the tremendous impact of e-commerce on the trade domain, especially on the international trade, it has become necessary for the educational institutes to start using a new way to teach this subject, instead of the traditional way. More people want to learn what e-commerce is and even more want to know how it works. Theories about e-commerce can be taught in class, but practicing real e-commerce, especially e-commerce of international trade, is not so easy. A simulation tool is needed at this time to give some help. So, since 1996, in our Lab, we have been committed to building a simulation environment to help the students understand what e-commerce is and how e-commerce works. As a result, we have succeeded in designing and implementing a simulation platform—SIMEC (Simulation of E-Commerce). We extended it to be used in many schools and enterprises as a teaching or a training tool in China.
The response of using this platform is very good. In order to improve the platform and make it in accordance with the commercial rules of e-commerce, in July 2002, we redesigned and implemented the platform using the J2EE framework and XML.

**DESIGN OF THE SIMULATION PLATFORM**

**Roles Assignment**

*Buyers and Sellers*

In e-commerce, there are still sellers and buyers. Whether you are a seller or a buyer is decided by the fact of whether you sell or buy something in a business. On an e-commerce simulation platform, in order to make the system work as a practical one, you must first choose one product domain and create a supply chain with corresponding roles included along the chain at every stage. How many stages will be included can be decided by your demand, sometimes if you hope the supply chain will be long, you can design more roles that supply the material and produce the products and vice versa.

**Auto Roles**

On an e-commerce platform, many roles are included in addition to the product buyers and sellers, such as the transporters. Sometimes you may only want the most important and effective roles, such as product buyers and sellers, to be played by students. In this case, the other roles will be named auto roles in SIMEC, which are not typical and do not participate in the whole trade procedure to be played automatically by the system. To do this, you can design some auto roles instead of student-played roles on the platform. For example, in SIMEC3.0, because the behaviors of a transporter are different than those of the general product buyers or sellers, the transporters are designed to have auto roles. They will conduct transportation trade with the enterprises automatically through the system.

**Core Functions of the Platform**

In reality, e-commerce includes many processes and deals with lots of departments. But as far as a simulation platform of e-commerce is concerned, our goal is
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